

App. No. 10/792,003
Reply to final Office Action

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Amendments to the Claims:

1. (previously presented) A coating for a superalloy substrate, the coating comprising:

a first coating layer formed on the substrate and having a composition represented by the formula $MCrAlYX$ wherein M comprises at least one member of the group consisting of Ni, Co, and Fe, and X comprises Pt and at least one member of the group consisting of Hf, Si, Zr, Ta, Re, and Ru, the weight percentage of X to the total composition being within the range of about 0.1% to about 28.0; and

at least one additional coating layer on either side of the first coating layer, wherein the at least one additional coating layer includes a modified $MCrAlY$ that does not include Pt.

2. (previously presented) The coating according to claim 1 wherein the weight percentage of X to the total composition is within the range of about 0.5% to about 15.0%.

3. (previously presented) The coating according to claim 1 wherein the weight percentage of X to the total composition is within the range of about 1.0% to about 7.0%.

4. (previously presented) The coating according to claim 1 wherein M comprises at least one member of the group consisting of Ni and Co.

5. (previously presented) The coating according to claim 1 wherein M comprises Ni/Co alloy.

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6. (previously presented) The coating according to claim 1 wherein M comprises Ni.

7 to 9. (canceled).

10. (previously presented) A nickel based powder composition for use in depositing a coating on a superalloy substrate, the nickel based powder composition having the following ingredients and weight percentages:

Element	Range Weight %
Co	about 15 - about 22
Cr	about 15- about 25
Al	about 8- about 15
Y	about 0.1- about 1.0
Pt	about 20- about 35
Hf	about 1.0- about 5.0
Si	about 1.0- about 5.0
Zr	0 - about -3.0
Ta	0 - about 5.0
Re	about 1.0- about 5.0
Ru	about 1.0- about 5.0
Ni	remainder.

11. (canceled).

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12. (previously presented) The nickel based powder composition according to claim 42 having the following ingredients and weight percentages:

Element	Weight %
Co	about 20
Cr	about 25
Al	about 13
Y	about 0.3
Hf	about 2.0
Si	about 0.65
Re	about 3.0
Ni	remainder.

13. (previously presented) The nickel based powder composition according to claim 42 having the following ingredients and weight percentages:

Element	Weight %
Co	about 20
Cr	about 22
Al	about 13
Y	about 0.3
Hf	about 2.0
Si	about 0.65
Re	about 3.0
Ru	about 1.5
Ni	remainder.

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14 to 15. (canceled).

16. (previously presented) A nickel based powder composition for use in depositing a coating on a superalloy substrate, the nickel based powder composition having the following ingredients and weight percentages:

Element	Range Weight %
Co	about 15 - about 22
Cr	about 15 - about 25
Al	about 8 - about 15
Y	about 0.1 - about 1.0
Hf	about 1.0 - about 5.0
Si	about 1.0 - about 5.0
Zr	about 1.0 - about 3.0
Ta	about 1.0 - about 5.0
Re	about 1.0 - about 5.0
Ru	about 1.0 - about 5.0
Ni	remainder.

17. (canceled).

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18 to 29. (canceled).

30. (previously presented) A method for preparing a coated high pressure turbine blade for assembly in a gas turbine engine comprising the steps of:

providing a suitable turbine blade having a tip to be coated;

grit blasting the turbine blade;

verifying a laser weld path on the turbine blade tip with a video camera;

providing at the turbine blade tip a powder alloy represented by the formula MCrAlYX wherein M wherein comprises at least one member of the group consisting of Fe, Ni, and Co; and wherein X comprises at least one member of the group consisting of Pt, Hf, Si, Zr, Ta, Re, and Ru; and wherein the weight percentage of X to the total composition is within the range of about 0.1% to about 28.0%;

laser welding the powder alloy to the turbine blade tip in a layer

checking the depth of the welded layer;

repeating the steps of laser welding and checking the depth until a desired coating thickness is achieved;

grinding the turbine blade tip; and

inspecting the turbine blade through FPI inspection or X-Ray inspection.

31. (previously presented) A method for depositing a modified MCrAlY coating onto a superalloy substrate in multiple layers comprising the steps of:

depositing a first layer of Pt-including modified MCrAlY onto the superalloy substrate;

and

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depositing a second layer of modified MCrAlY on top of the first layer, wherein the second layer does not include Pt.

32 to 33. (canceled).

34. (previously presented) A coated turbine blade comprising:

an airfoil having a convex face and a concave face;

a base assembly attached to said airfoil;

a tip at the outer radial end of the airfoil; and

a coated region on the tip wherein the coated region comprises:

a first coating layer formed on the substrate and having a composition represented by the formula MCrAlYX, wherein M comprises at least one member of the group consisting of Ni, Co, and Fe, X comprises a combination of at least Pt, Hf and Si, and the weight percentage of X to the total composition is within the range of about 0.1% to about 28.0%, and

at least one additional coating layer on either side of the first coating layer, wherein the at least one additional coating layer includes a modified MCrAlY that does not include Pt.

35. (original) The turbine blade according to claim 34 wherein said MCrAlYX coating has a thickness of up to approximately 0.050 inch.

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36. (original) The turbine blade according to claim 34 wherein said MCrAlYX coating has a thickness of up to approximately 0.020 inch.

37. (canceled).

38. (original) The turbine blade according to claim 34 wherein said coating has a thickness of up to approximately 0.020 inch after post-welding grinding.

39. (original) The turbine blade according to claim 34 wherein said coating provides resistance to oxidation and corrosion.

40. (original) The turbine blade according to claim 34 wherein said airfoil further comprises a superalloy.

41. (previously presented) A nickel based powder composition for use in depositing a coating on a superalloy substrate as a coating comprising:

a composition represented by the formula MCrAlYX,

wherein M comprises at least one member of the group consisting of Ni, Co, and Fe, X comprises a combination of at least Pt, Re, Ru, Hf and Si, and the weight percentage of X to the total composition is within the range of about 0.1% to about 28.0%.

42. (canceled).

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43. (previously presented) The turbine blade according to claim 34 wherein X further comprises at least one element from the group consisting of Zr and Ta.